

REMARKS

Claims 1-29 have been previously cancelled.

Claims 30-39 are pending in the application.

Claims 30-39 stand rejected.

Claims 40-49 have been added.

I. New Claims

Applicants have added new claims 40-49, and respectfully assert that these claims are not taught or suggested by the cited prior art.

II. Rejection Under 35 U.S.C. §112

Claim 30 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, there is language in claim 30 that is confusing and contradictory. This language is a result of a typographical mistake. Applicants have amended claim 30 to correct this typographical mistake. The amendment to claim 30 is not meant to overcome a rejection for patentability purposes, since it is only to address a typographical mistake. Thus, no file wrapper history estoppel should apply to claim 30 or any claims depending therefrom.

III. Rejections Under 35 U.S.C. §102

Claims 30-39 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Burns et al.* (U.S. Publication No. 2004/0219732 A1). In response, Applicants respectfully traverse these rejections. As the Examiner is well aware, for a claim to be anticipated under §102, each and every element of the claim must be found within the cited prior art reference.

With respect to claim 30, this claim specifically recites that an electrical field is applied between the template and the body to move a portion of the liquid to spread the liquid over the body to form a film, while preventing discontinuities in the film. In rejecting this claim

limitation, the Examiner has referred to paragraphs [0104]-[0106], [0109], and [0113].

Applicants respectfully assert that none of this language, nor any other language within *Burns* teaches or even suggests this claim limitation.

Paragraph [0104] describes continuous flow liquid transport using a microfluidic device developed with silicon, and contrasts the invention within *Burns* from that as *Burns* describes the transport of discrete droplets in silicon using internal forces, in contrast to external forces created by pumps. Nowhere in this paragraph is it taught or suggested to apply an electric field between the template and the body to move a liquid so that it spreads over the body to form a film while preventing discontinuities in the film.

Paragraph [0105] discusses the advantages of using silicon, the creating of a template which can then be used to replicate structures, etc. Essentially, this paragraph describes the advantages of how silicon can be used in such devices because of the typical semiconductor manufacturing processes that enable substrates to be replicated and how electronic components can be fabricated thereon. Again, the claim limitation is not in any way taught or suggested by such a disclosure.

Paragraph [0106] describes how a sample and reagent can be injected into the device and transported as discrete droplets through channels to a reaction chamber. Again, there is no discussion or even suggestion within this paragraph of applying an electric field to move liquid to form a film while preventing discontinuities in the film.

Paragraph [0109] describes the transport of discrete droplets in silicon using channels or tubes to transport the liquid to desired locations. It then goes on to further describe the advantages of discrete droplet movement. The discrete droplet movement is then described as being performed using heat to create thermal gradients in order to move each of the droplets. This does not in any way teach or suggest applying an electric field to spread a liquid to form a film.

Paragraph [0113] merely discloses the use of valves to control and regulate fluid flow. Again, the claim limitations are not in any way taught or suggested within this paragraph.

The only other language specifically cited by the Examiner is paragraph [0047]. However, the Examiner uses this paragraph to address the other two limitations within the claim and not the step of applying an electric field, etc. Nevertheless, Applicants will address the

language within this paragraph, which merely describes suspending extremely fine particles in non-conducting fluids and then applying an electric field to change the viscosity of such fluids. This does not in any way teach or suggest applying an electric field between a template and body to move a liquid so that it spreads to form a film, while preventing discontinuities in the film.

Moreover, with respect to the above-noted paragraphs in *Burns* that the Examiner has cited to, there is absolutely no language within these paragraphs or anywhere else within *Burns* that teaches or suggests that the film that is spread and formed is done so while preventing discontinuities in the film.

As a result of the foregoing, Applicants respectfully assert that the Examiner has failed to prove a *prima facie* case of anticipation in rejecting claim 30.

Claim 31 specifically recites that the step of applying the electric field recited in claim 30 includes applying an electric field of sufficient magnitude to overcome capillary forces of the liquid between the template and the body. The Examiner again cites to paragraph [0047]. The teaching of using an electric field to change the viscosity of a liquid that contains extremely fine particles in a non-conducting fluid does not in any way address this claim limitation. There is no discussion within this paragraph, or anywhere else within *Burns*, of capillary forces and performing an application so that such capillary forces are overcome. Applicants respectfully assert that the Examiner has failed to prove a *prima facie* case of anticipation in rejecting claim 31.

Claim 32 recites that the template is provided with an electrically conductive layer that is transparent to radiation that causes the liquid material to polymerize and cross-link. Claim 32 further recites that an electric field is applied by applying a voltage to that conductive layer. Nowhere within *Burns* are such limitations taught or suggested.

In rejecting claim 32, the Examiner has relied upon paragraph [0105]. Applicants have already discussed the teachings of this paragraph above. Nowhere is it taught or suggested within that paragraph that a template is provided that has an electrically conductive layer that is transparent to radiation that causes the liquid recited in claim 30 to polymerize and cross-link.

In rejecting claim 32, the Examiner also recites to paragraph [0108]. This paragraph merely discusses the production of microchannels in the silicon substrate. Nowhere is it disclosed in that paragraph, or even suggested, that a template is provided with an electrically

conductive layer that is transparent to radiation that causes the liquid material to polymerize and cross-link.

The Examiner also cites to paragraph [0110]. This language merely discusses the process whereby heat is applied to move a droplet within a channel. Applying of a voltage is discussed, but the voltage is applied to generate heat to move the droplet. This paragraph does not in any way teach or suggest providing a template with an electrically conductive layer that is transparent to radiation that causes the liquid material to polymerize and cross-link.

In rejecting claim 32, the Examiner also relies upon paragraph [0114]. This language merely discusses the valves noted in paragraph [0113] and properties of the melttable material, which is disclosed as being preferably wax. Though a phase change material is discussed in this paragraph, the phase change is merely from liquid to solid based on the melting points of the material. This does not teach or suggest a conductive layer that is transparent to radiation that causes a liquid material to polymerize and cross-link. Polymerization and cross-linking is not equivalent to the mere phase change of liquid to solid and back using heat.

The Examiner then goes on to cite paragraphs [0191]-[0192] in rejecting claim 32. These paragraphs merely discuss how the channels were created in glass wafers. There is no discussion or suggestion within this language of providing a template that has an electrically conductive layer that is transparent to radiation that causes the liquid material recited in claim 30 to polymerize and cross-link.

Finally, in rejecting claim 32, the Examiner cites to paragraph [0211]. This language discusses how hydrogel valves can be made by polymerizing a liquid monomeric solution. However, this does not in any way teach or suggest, even in combination with the other paragraphs noted by the Examiner, of providing a template that has an electrically conductive layer that is transparent to radiation that causes the liquid material that is used to spread to form a film in order to polymerize that liquid material and cross-link it.

As a result of the foregoing, Applicants respectfully assert that the Examiner has failed to prove a *prima facie* case of anticipation in rejecting claim 32.

Claim 33 recites that the template is formed from fused-silica and includes an electrically conductive layer that is transparent to radiation that causes the liquid material to polymerize and cross-link, and it also recites applying the electric field further includes applying a voltage to the

conductive layer. In rejecting this claim, the Examiner is again relying upon paragraphs [0105], [0108], [0110], [0114], [0191]-[0192], [0199], and [0211]. For reasons as similarly given above with respect to claim 32, Applicants again assert that *Burns* does not anticipate claim 33. The Examiner also cites [0201]. This paragraph also does not teach or suggest a conductive layer that is transparent to radiation that causes the liquid material to polymerize and cross-link. Though this paragraph mentions depositing on the wafer surface an etch-sensitive material that includes phosphosilicate glass, this does not teach that the template is formed from fused-silica. For the reasons given here, Applicants respectfully assert that the Examiner has failed to prove a *prima facie* case of anticipation in rejecting claim 33. Claim 34 specifically recites that the radiation to which the conductive layer in claim 33 is transparent to includes ultra-violet light. In rejecting this claim, the Examiner is parsing the claim without looking at it as a whole, which is impermissible.

Paragraph [0192] merely discloses that bonds for bonding channels to a heater-element wafer were cured using an ultra-violet light source. This does not teach or suggest a template including an electrically conductive layer that is transparent to ultra-violet radiation that causes the liquid material recited in claim 30 to polymerize and cross-link. As a result, Applicants respectfully assert that the Examiner has failed to prove a *prima facie* case of anticipation in rejecting claim 34.

With respect to claim 35, the Examiner has cited all sorts of figures and paragraphs in an attempt to show that *Burns* teaches that the template is provided with an electrically conductive layer that is contiguous in a region in superimposition with said liquid. First, the Examiner cites all of the items shown in Figure 2 of *Burns*. However, Figure 2 shows the construction of a silicon device. This does not show any electrically conductive layers contiguous in a region in superimposition with the liquid. The silicon cannot be reasonably said to comprise electrically conductive layers. The Examiner then cites paragraphs [0105], [0108], [0110], [0114], [0191], [0192], [0199], [0211], and [0201]. Applicants have already discussed each of these paragraphs above. None of these paragraphs in any way teaches or suggests a template with an electrically conductive layer. Furthermore, naturally, there would not be any teaching or suggestion in these paragraphs of a template with an electrically conductive layer that is contiguous in a region in

superimposition with the liquid. As result of the foregoing, Applicants respectfully assert that claim 35 is not anticipated by *Burns*.

Claim 36 is patentable for similar reasons as given above with respect to claim 35.

Claim 37 is similarly patentable for reasons as given above with respect to claim 35.

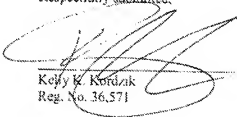
Claim 38 is similarly patentable for reasons as given above with respect to claim 35.

Claim 39 is similarly patentable for reasons as given above with respect to claim 35.

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Respectfully submitted,

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